



JFW

Patent  
Attorney Docket No. 659944-100001-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: the Application of: )  
Jou, Ming-Jiunn et al. ) **Group Art Unit: 2879**  
Serial No.: 10/767,402 ) **Examiner:**  
Filed: January 29, 2004 )  
For: **LIGHT EMITTING DEVICE** )  
**HAVING A HIGH RESISTIVITY** )  
**CUSHION LAYER** )

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with 37 CFR §§ 1.97 and 1.98, the items identified in the Information Disclosure Statement ("IDS") are brought to the attention of the Office. The items are listed on the attached form PTO-1449 and copies are enclosed for the convenience of the Examiner. Applicant respectfully requests that a copy of the Form PTO-1449, as considered and initialed by the Examiner, be returned with the next communication.

The items identified in the IDS may or may not be "material" pursuant to CFR § 1.56. The submission thereof by Applicant is not to be construed as an admission that any such patent, publication or other information referred to therein is material or considered to be material (37 CFR § 1.97(h)), or even qualifies as "prior art" under 35 USC § 102 with respect to this invention unless specifically designated by Applicant as such.

In accordance with 37 CFR 1.97(g), the filing of the Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information, as defined in 37 CFR 1.56, exists.

CERTIFICATE OF MAILING  
(37 C.F.R. § 1.8)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as First Class Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA, 22313-1450.

October 20, 2004  
Date of Deposit  
LAI-2155803v1

*Yolanda G. Ybuan*  
Yolanda G. Ybuan

Item AG is a non-English reference. With respect to the concise explanation of the relevance of Item AG, Item R (U.S. Patent No. 5,789,768) is an English-language equivalent of Item AG.

Also included as Item CD is a Civil Docket Sheet pleading index for a case entitled Lumileds Lighting U.S., LLC v. Epistar Corporation, Case No. 4:02-cv-05077 CW, involving U.S. Patent No. 5,008,718. If the Examiner wishes to receive a copy of any pleading identified in the index, we will readily provide it.

**INFORMATION DISCLOSURE STATEMENT FILING PROVISION:**

☒ This IDS is believe to be timely in that it is being submitted under 37 CFR § 1.97(b), that is (1) within three months of the filing date of the application, which is not a continued prosecution application filed under § 1.53(d); or (2) within three months of entry of the national stage as set forth in 37 CFR § 1.491; or (3) before the mailing of a first Office Action on the merits; or (4) before the mailing of a first Office Action after filing a request for continued examination under § 1.114. Thus, no fee is required.

☒ However, if the undersigned is in error in this regard, Applicant respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and charge the fee due under 37 CFR § 1.17(p) to the deposit account referenced below.

☐ However, if the undersigned is in error in this regard, Applicant respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and a statement under 37 CFR § 1.97(e) is included below, thus no fee is required.

☐ This IDS is being submitted under 37 CFR § 1.97(c), that is after mailing of a first Office action on the merits, but before a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311.

☐ The fee due under 37 CFR § 1.17(p) is submitted herewith.

☐ A statement under 37 CFR § 1.97(e) is included below, thus no fee is required. In the event that this IDS is not received for a Final Action or a Notice of Allowance, then Applicant respectfully requests that the Office consider the filing of these papers to be submitted under 37 CFR § 1.97(d) and charge the fee due under 37 CFR § 1.17(p) to the deposit account below.

☐ This IDS is being submitted under 37 CFR § 1.97(d), that is after a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311, but before payment of the issue fee. A statement under 37 CFR § 1.97(e) is included below. The fee due under 37 CFR § 1.17(p) is submitted herewith.

**STATEMENT UNDER 37 CFR § 1.97(e):**

☐ Each item contained in this IDS was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS.

☐ No item contained in the IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this statement after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of this IDS.

**PAYMENT AND/OR AUTHORIZATION TO CHARGE FEES:**

☐ A check in the amount of \_\_\_\_\_ is enclosed for the above fee(s).

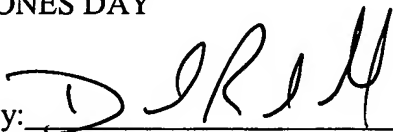
☐ Please charge \_\_\_\_\_ to Deposit Account No. 50-2468 for the above fee(s).

The Commissioner is authorized to charge any fees required by the filing of these papers, and to credit any overpayment to Jones Day's Deposit Account No. 50-2468.

Respectfully submitted,

JONES DAY

Dated: 10/19/04

By:   
David A. Randall  
Reg. No. 37,217

CUSTOMER NO. 34026

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<b>FORM PTO-1449</b>  <b>LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT</b>  (Use several sheets if necessary)	<b>ATTY. DOCKET NO.</b> 659944-100001	<b>SERIAL NO.</b> 10/767,402
	<b>APPLICANT:</b> Jou, Ming-Jiunn et al.	
	<b>FILING DATE:</b> January 29, 2004	<b>GROUP:</b> 2879

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL	REF. NO.	DOCUMENT NUMBER	ISSUE DATE	NAME	CLASS	SUB CLASS	FILING DATE
	A	3,889,286	06/10/75	Debasis	357/67		12/26/73
	B	4,570,172	02/11/86	Henry et al.	357/17		12/19/83
	C	4,680,602	07/14/87	Watanabe et al.	357/17		09/06/84
	D	4,775,876	10/04/88	Moyer	357/17		09/08/87
	E	4,864,369	09/05/89	Snyder et al.	357/17		09/05/89
	F	4,918,497	04/17/90	Edmond	357/17		12/14/88
	G	5,048,035	09/10/91	Sugawara et al.	372/45		05/29/90
	H	5,138,404	08/11/92	Ishikawa et al.	357/16		05/31/91
	I	5,164,798	11/17/92	Huang	257/97		07/05/91
	J	5,233,204	08/03/93	Fletcher et al.	257/13		01/10/92
	K	5,300,791	04/05/94	Chen et al.	257/94		09/29/92
	L	5,359,209	10/25/94	Huang	257/94		12/09/93
	M	5,376,580	12/27/94	Kish et al.	437/127		03/19/93
	N	5,481,122	01/02/96	Jou et al.	257/9		07/25/94
	O	5,661,742	08/26/97	Huang et al.	372/46		05/22/96
	P	Re 35,665	11/18/97	Lin et al.	257/94		07/25/96
	Q	5,717,226	02/10/98	Lee et al.	257/86		09/18/96
	R	5,789,768	08/04/98	Lee et al.	257/96		06/23/97
	S	5,869,849	02/09/99	Jou et al.	257/96		10/05/95
	T	5,917,201	06/29/99	Ming-Jiunnn et al.	257/94		09/04/97
	U	6,057,562	05/02/00	Lee et al.	257/96		04/18/97

<b>EXAMINER:</b> Yet unassigned	<b>DATE CONSIDERED:</b>
<b>EXAMINER:</b> Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include a copy of this form with next communication to applicant	

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	V	6,066,862	05/23/00	Chang et al.	257/103		08/31/98
	W	6,169,294 B1	01/02/01	Biing-Jye et al.	257/79		09/08/98
	X	6,225,648 B1	05/01/01	Hsieh et al.	257/95		07/09/99
	Y	6,552,367 B1	04/22/03	Hsieh et al.	257/94		10/06/00
	Z						

FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL	REF. NO.	DOCUMENT NUMBER	PUBLICATION/ISSUE DATE	COUNTRY OR PATENT OFFICE	CLASS	SUB CLASS	TRANSLATION YES NO	
	AA	EPO 0 328 134 A2	02/10/89	EPO				
	AB	EPO 0 328 393 A2	02/09/89	EPO				
	AC	EPO 0 333 418 A2	03/14/89	EPO				
	AD	EPO 0 334 637 A2	03/22/89	EPO				
	AE	EPO 0 434 233 A1	11/23/90	EPO				
	AF	EPO 0 434 233 B1	11/23/90	EPO				
	AG	DE 198 17 368 A1	12/24/98	Germany				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)		
AH	Woodall, J.M. et al., "Liquid Phase Epitaxial Growth of $Ga_{1-z}Al_zAs^I$ ," <i>J. Electrochem Soc.</i> , <u>116(6)</u> , 899-903	
AI	Nuese, C.J. et al., "Optimization of Electroluminescent Efficiencies for Vapor-Grown $GaAs_{1-z}P_z$ Diodes," <i>J. Electrochem Soc.</i> , <u>116(2)</u> , 248-253, 1969	
AJ	Chawla, B. et al., "Transition Region Capacitance of Diffused p-n Junctions," <i>IEEE Transactions On Electron Devices</i> , <u>18(3)</u> (1971)	
AK	Dierschke, L.E. et al., "Efficient Electroluminescence from Zinc-Diffused $Ga_{1-x}Al_xAs$ Diodes at 25°C," <i>Applied Phys.</i> <u>19(4)</u> , 98-100 (1971)	
AL	Nuese, C.J. et al., "Orange Laser Emission and Bright Electroluminescence from $In_{1-x}Ga_xP$ Vapor-Grown p-n Junctions," <i>Appl. Phys. Lett.</i> , <u>20(11)</u> , 431-433 (1972)	
AM	Berenbaum, L., "Effect of Oxygen on the Electromigration Behaviour of Al Thin Films," <i>Appl. Phys. Lett.</i> , <u>20(11)</u> , 434 (1972)	

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AN	Nuese, C.J., "The Preparation and Properties of Vapor-Grown $\text{In}_{1-x}\text{Ga}_x\text{P}$ , <i>Metallurgical Transactions</i> , <u>2</u> , 789-794 (1971)
AO	Hart, P.B., "Green and Yellow Emitting Devices in Vapor-Grown Gallium Phosphide," <i>Proceedings of the IEEE</i> , <u>61(7)</u> , 880-883 (1973)
AP	Kaneko, K. et al., "A New Method of Growing GaP Crystals for Light-Emitting Diodes," <i>Proceedings of the IEEE</i> , <u>61(7)</u> , 884 (1973)
AQ	Bergh et al., "Light Emitting Diodes, 1976 (Oxford University Press, Oxford)
AR	Nuese, C.J., "III-V Alloys For Optoelectronic Applications," <i>Journal of Electronic Materials</i> , <u>6(3)</u> , 253-293 (1976)
AS	Dawson, L.R., "High-efficiency graded-gand-gap $\text{Ga}_{1-x}\text{Al}_x\text{As}$ light-emitting," <i>J. Appl. Phys.</i> , <u>46(6)</u> , 2486-2492 (1977)
AT	Nishizawa, J. et al., "Minority-carrier lifetime measurements of efficient GaAIAs <i>p-n</i> heterojunctions," <i>J. Appl. Phys.</i> , <u>46(8)</u> , 3484-3495 (1977)
AU	Ishiguro, H. et al., "High efficient GaAIs light-emitting diodes of 660 nm with a double heterostructure on a GaAIAs substrate," <i>Appl. Phys. Lett.</i> <u>43(11)</u> , 1034-1036 (1983)
AV	Kurata K. et al., "An Exprimental Study on Improvement of Performance for Hemispherically Shaped High-Power IRED's with $\text{Ga}_{1-x}\text{Al}_x\text{As}$ Grown Injunctions," <i>IEE Trans El. Dev</i> , ED-28(4) 374-379 (1981)
AW	Pilkuhn, M.H., "Light Emitting Diodes," 1981, Handbook on Semiconductors ,Vol. 4 eds. T.S. Moss and C. Hilsum (North Holland Publishing Company, New York)
AX	Chopra, K.L. et al., "Transparent Conductors - A Status Review," <i>Thin Solid Films</i> <u>102</u> , 1-46 (1983)
AY	Hing, I. et al., "High aluminum Composition AlGaInP Grown by Metalorganic Chemical Vapor Deposition - Impurity Doping and 590 nm (Orange) Electroluminescence, <i>Japanese Journal of Applied Physics</i> <u>23(9)</u> 746-748 (1984)
AZ	Yuan J.S. et al., "Organometallic vapor phase epitaxial growth of AlGaInP," <i>J. Appl. Phys.</i> <u>57(4)</u> , 1380-1383 (1985)
BA	Watanabe, M. et al., "Interface properties for GaAs/InGaAlP heterojunctions by the capacitance-voltage profiling technique," <i>Appl. Phys. Lett</i> <u>50(14)</u> , 906-908 (1987)
BB	Tanaka et al., "Room Temperature Operation Of MBE-Grown InGaP/InGaAlP MOW Visible Laser Diodes," <i>Electronic Letters</i> , <u>22 (4)</u>
BC	Bontemps, A. et al., "Laser annealing of Bi-implanted ZnTe," <i>Appl. Phys. Lett.</i> <u>36(7)</u> , 542-544 (1960)
BD	Kuo, C.P. et al., "High performance AiGaInP visible light-emitting diodes," <i>Appl. Phys. Lett</i> , <u>57(27)</u> , 2937-2939 (1990)
BE	Gillessen, K. et al., "Light Emitting Diodes," Prentice/Hall International
BF	Kuo, C.P. et al., "Stimulated Emission in $\text{In}_{0.5}(\text{Al}_x\text{Ga}_{1-x})_{0.5}\text{P}$ Quantum Well Heterostructures," <i>Journal of Crystal Growth</i> <u>93</u> , 389-395 (1988)
BG	Konagai, M. et al., "Metallilc p-TYPE GaAs And GaAlAs Grown By Metalorganic Molecular Beam Epitaxy," <i>Journal of Crystal Growth</i> <u>98</u> , 167-173 (1989)
BH	Duen Ho, F., "Space-charge layer capacitance and offset voltage of an exponential-constant p-n junction," <i>Int. J. Electronics</i> , <u>70(2)</u> , 327-342 (1991)
BI	Fletcher, R.M. et al., "The Growth and Properties of High Performance AlGaInP Emitters using a Lattice Mismatched GaP Window Layer," <i>Journal of Electronic Materials</i> , <u>26(12)</u> , 1125-1130 (1991)

EXAMINER:  
Yet unassigned

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	BJ	Domen K., et al., "Study on radiative efficiency in AlGaInP/GaInP double-heterostructures: influence of deep level in cladding layers," <i>Journal of Crystal Growth</i> , <u>115</u> 529-532 (1991)
	BK	Chen, T.P. et al., "AlGaInP green light emitting diode," <i>SPIE</i> <u>1813</u> 136-141 (1992)
	BL	Huang et al, "Twofold efficiency improvement in high performance AlGaInP light-emitting diodes in the 555-620 nm spectral region using a thick GaP window layer," <i>Appl. Phys. Lett.</i> <u>61</u> (9), 1045-1047 (1992)
	BM	Gunshot, R.L. et al., "The molecular beam epitaxial growth of wide gap II-VI injection lasers and light-emitting diodes," <i>Thin Solid Films</i> <u>231</u> , 190-196 (1993)
	BN	Lin, J.F. et al., "Growth of GaP window layer on AlGaInP light-emitting diodes using misoriented substrates," <i>Crystal Growth</i>
	BO	Chi, G.C. et al., "Window layer for current spreading in AlGaInP light-emitting diode," <i>J. Appl. Phys.</i> <u>76</u> (5), 2600-2611 (1994)
	BP	Chang, S.J., "AlGaInP Yellow-Green Light-Emitting Diodes with a Tensile Strain Barrier Cladding Layer"
	BQ	Coldren, L.A. et al., "Diode Lasers and Photonic Integrated Circuits," John Wiley & Sons, Inc. (1995)-
	BR	Chang, S.J., et al., "AlGaInP/GaP Light-Emitting Diodes Fabricated by Wafer Direct Bonding Technology," <i>Jpn. J. Appl. Phys</i> <u>35</u> (5), 4199-4202 (1996)
	BS	Ta+gare, M.V. et al., "Heavy Be doping of GaP and In <sub>x</sub> Ga <sub>1-x</sub> P," <i>J. Vac. Sci Technol. B.</i> <u>14</u> (2), 2325-2326 (1996)
	BT	Tagare, M.V. et al., "Nonalloyed ohmic contacts to heavily Be-doped GaP and In <sub>x</sub> Ga <sub>1-x</sub> P," <i>Appl Phys. Lett.</i> <u>68</u> (24), 2485-2487 (1996)
	BU	Yang, J.W., "InGaIn-GaN based light-emitting diodes over (111) spinel substrates," <i>Appl. Phys. Lett.</i> <u>69</u> (3), 369-370 (1996)
	BV	Chang, S.J. et al., "AlGaInP multiquantum well light-emitting diodes," <i>IEEE</i> <u>144</u> (6), 405-409 (1997)
	BW	Chang, S.J. et al., "AlGaInP-GaInP Compressively Strained Mutiquantum-Well Light-Emitting Diodes For Polymer Fiber Application," <i>IEEE Photonics Technology</i> <u>16</u> (4), 713-715 (1996)
	BX	Fundamentals of Semiconductor Physics and Devices, World Scientific Publishing Co., Pte. Ltd. (1997), pp. 38-41
	BY	Stringfellow, G.B. and Craford, eds., "High Brightness Light Emitting Diodes," Semiconductors and Semimetals, Academic Press (1997)
	BZ	Morgan, D.V., "Annealing effects on opto-electronic properties of sputtered and thermally evaporated indium-tin-oxide films," <i>Thin Solid Films</i> <u>312</u> , 268-272 (1998)
	CA	Qingke, Z., "Manufacture of AlGaInP Visible Light-Emitting Diodes By MOCVD & VPE," <u>42</u> (4), 993-995 (1994)
	CB	Chang, S.J. et al., "650 nm AlGaInP/GaInP Compressively Strained Multi-Quantum Well Light Emitting Diodes," <i>Jpn. J. Appl. Phys.</i> <u>37</u> , 653-655 (1998)
	CC	Chang, C.S. et al., "AlGaInP/GaInP multiquantum well light emitting diodes with an intentionally doped active layer," Dept. of Electrical Engineering, National Cheng Kung University
	CD	Civil Docket For Case No. 4:02-cv-05077-CW, pp. 1-69 (2004)

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